IN THE CLAIMS

Please amend claims 1-9 as follows:

1. (CURRENTLY AMENDED) A method of optimizing a query in a computer system, the query being performed by the computer system to retrieve data from a database stored on the computer system, the method comprising:

(a) during compilation of the query, maintaining a GROUP BY clause with one or more GROUPING SETS, ROLLUP or CUBE operations in its original form until after query rewrite; and

(b) at a later stage of query compilation, translating the GROUP BY clause with the GROUPING SETS, ROLLUP or CUBE operations into a plurality of levels having one or more grouping sets, and generating a query execution plan with a super group block having an array of pointers, wherein each pointer points to a linked list representing grouping sets for a particular level.

2. (CURRENTLY AMENDED) The method of claim 1, further comprising:

(1) ~~after compilation of the query~~ at query execution time, dynamically determining a grouping sets sequence for the GROUP BY clause with the GROUPING SETS, ROLLUP or CUBE operations based on intermediate grouping sets, in order to optimize the grouping sets sequence.

~~(2) optimizing execution of the grouping sets sequence by selecting a smallest grouping set from a previous one of the levels as an input to a grouping set on a next one of the levels.~~

3. (CURRENTLY AMENDED) The method of claim 2, wherein the dynamically determining step further ~~comprising~~ comprises (1) performing a GROUP BY for a base grouping set and then optimizing execution of the grouping sets sequence by selecting a smallest grouping set from a previous one of the levels as an input to a grouping set on a next one of the levels, and (2) performing a UNION ALL operation on the grouping sets.

4. (CURRENTLY AMENDED) A computer-implemented apparatus for optimizing a query, the query being performed to retrieve data from a database, the apparatus comprising:

(a) a computer system;

(b) logic, performed by the computer system, for

(1) during compilation of the query, maintaining a GROUP BY clause with one or more GROUPING SETS, ROLLUP or CUBE operations in its original form until after query rewrite; and

(2) at a later stage of query compilation, translating the GROUP BY clause with the GROUPING SETS, ROLLUP or CUBE operations into a plurality of levels having one or more grouping sets, and generating a query execution plan with a super group block having an array of pointers, wherein each pointer points to a linked list representing grouping sets for a particular level.

5. (CURRENTLY AMENDED) The apparatus of claim 4, further comprising logic for:

(1) ~~after compilation of the query~~ at query execution time, dynamically determining a grouping sets sequence for the GROUP BY clause with the GROUPING SETS, ROLLUP or CUBE operations based on intermediate grouping sets, in order to optimize the grouping sets sequence.

~~(2) optimizing execution of the grouping sets sequence by selecting a smallest grouping set from a previous one of the levels as an input to a grouping set on a next one of the levels.~~

6. (CURRENTLY AMENDED) The apparatus of claim 5, wherein the logic for dynamically determining step further ~~comprising~~ comprises logic for (1) performing a GROUP BY for a base grouping set and then optimizing execution of the grouping sets sequence by selecting a smallest grouping set from a previous one of the levels as an input to a grouping set on a next one of the levels, and (2) performing a UNION ALL operation on the grouping sets.

7. (CURRENTLY AMENDED) An article of manufacture embodying logic for performing a method for optimizing a query, the query being performed by a computer system to retrieve data from a database stored in a data storage device coupled to the computer system, the method comprising:

(a) during compilation of the query, maintaining a GROUP BY clause with one or more GROUPING SETS, ROLLUP or CUBE operations in its original form until after query rewrite; and

(b) at a later stage of query compilation, translating the GROUP BY clause with the GROUPING SETS, ROLLUP or CUBE operations into a plurality of levels having one or more grouping sets, and generating a query execution plan with a super group block having an array of pointers, wherein each pointer points to a linked list representing grouping sets for a particular level.

8. (CURRENTLY AMENDED) The article of manufacture of claim 7, further comprising:

(1) ~~after compilation of the query~~ at query execution time, dynamically determining a grouping sets sequence for the GROUP BY clause with the GROUPING SETS, ROLLUP or CUBE operations based on intermediate grouping sets, in order to optimize the grouping sets sequence.

~~(2) optimizing execution of the grouping sets sequence by selecting a smallest grouping set from a previous one of the levels as an input to a grouping set on a next one of the levels.~~

9. (CURRENTLY AMENDED) The article of manufacture of claim 8, wherein the dynamically determining step further ~~comprising~~ comprises (1) performing a GROUP BY for a base grouping set and then optimizing execution of the grouping sets sequence by selecting a smallest grouping set from a previous one of the levels as an input to a grouping set on a next one of the levels, and (2) performing a UNION ALL operation on the grouping sets.